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Substitute for form 1449/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

**Complete if Known**

Application Number	Not yet assigned 10691026
Filing Date	March 9, 2006
First Named Inventor	Jonathan J. Wierer Jr.
Art Unit	Not yet assigned
Examiner Name	Not yet assigned
Attorney Docket Number	LUM-03-03-02-1C

Sheet 3 of 7

**NON PATENT LITERATURE DOCUMENTS**

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
SC		J.J. WIERER et al., "InGaN/GaN quantum-well heterostructure light-emitting diodes employing photonic crystal structures," Applied Physics Letters, Vol. 84, No. 19, May 10, 2004, pp. 3885-3887.	
		LEE et al., "Modified spontaneous emission from a two-dimensional photonic bandgap crystal slab," J. Opt. Soc. Am. B, Vol. 17, No. 8, August 2000, pp. 1438-1442.	
		BORODITSKY et al., "Surface recomblination measurements on III-V candidate materials for nanostructure light-emitting diodes," Journal of Applied Physics, Vol. 87, No. 7, April 1, 2000, pp. 3497-3504.	
		BORODITSKY et al., "Light extraction from optically pumped light-emitting diode by thin-slab photonic crystals," Applied Physics Letters, Vol. 75, No. 8, August 23, 1999, pp. 1036-1038.	
		WINDISCH et al., "Light-emitting diodes with 31% external quantum efficiency by outcoupling of lateral waveguide modes," Applied Physics Letters, Vol. 74, NO. 16, April 19, 1999, pp. 2256-2258.	
		XU et al., "Finite-difference time-domain calculation of spontaneous emission lifetime in a microcavity," J. Opt. Soc. Am. B, Vol. 16, No. 3, March, 1999, pp. 465-474.	
		HWANG et al., "Spontaneous emission rate of an electric dipole in a general microcavity," Physical Review B, Vol. 60, No. 7, August 15, 1999, pp. 4688-4695.	
		FAN et al., "High Extraction Efficiency of Spontaneous Emission from Slabs of Photonic Crystals," Physical Review Letters, Vol. 78, No. 17, April 28, 1997, pp. 3294-3297.	
		Vuckovic et al., "Surface Plasmon Enhanced Light Emitting Diode," Journal of Quantum Electronics, Vol. 36, 2000, pp. 1-13.	
SC		Tredicucci et al., "Single-mode surface-plasmon laser," Applied Physics Letters, Vol. 76, No. 16, April 17, 2000, pp. 2164-2166.	

Examiner Signature	/Sara Crane/	Date Considered	06/25/2006
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SC		Imada et al., "Coherent two-dimensional lasing action in surface-emitting laser with triangular-lattice photonic crystal structure," Applied Physics Letters, Vol. 75, No. 3, July 19, 1999, pp. 316-318.	
		Poitage et al., "Vertical-cavity surface-emitting resonances in photonic crystal films," J. Opt. Soc. Am. A, Vol. 18, No. 2, February 2001, pp. 442-447.	
		TIWARI, S., "Compound Semiconductor Device Physics," Academic Press, Inc., San Diego, CA, 1992, pp. 182-186.	
		G.B. STRINGFELLOW and M. GEORGE CRAWFORD, eds., "High Brightness Light Emitting Diodes," Academic Press, Inc., 1997, Chapter 5, "AlGaInP Light-Emitting Diodes," by F.A. KISH and R.M. FLETCHER, pp. 149-170.	
		P.A. KOHL, "Photoelectrochemical etching of semiconductors", IBM J. Res. Develop., Vol. 42, No. 5, 5 September 1998, pp. 629-637.	
		Chen-Fu CHU et al., "Comparison of p-Side Down and p-Side Up GaN Light-Emitting Diodes Fabricated by Laser Lift-Off", Jpn. J. Appl. Phys., Vol. 42 (2003), Part 2, NO. 2B, 15 February 2003, pp. L147-L150.	
		W.S. WONG et al., "InxGa1-xN light emitting diodes on Si substrates fabricated by Pd-In metal bonding and laser lift-off", Applied Physics Letters, Vol. 77, No. 18, 30 October 2000, pp. 2822-2824.	
		H. BENISTY et al., "Impact of Planar Microcavity Effects on Light Extraction - Part I: Basic Concepts and Analytical Trends", IEEE Journal of Quantum Electronics, Vol. 34, No. 9, September 1998, pp. 1612-1631.	
✓		T. FUJII et al., "Increase in the extraction efficiency of GaN-based light-emitting diodes via surface roughening", Applied Physics Letters, Vol. 84, No. 6, 9 February 2004, pp. 855-857.	
SC		Y.-K. SONG et al., "Resonant-cavity InGaIn quantum-well blue light-emitting diodes", Applied Physics Letters, Vol. 77, No. 12, 18 September 2000, pp. 1744-1746.	

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Substitute for form 1449/PTO		<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary)		Application Number	10/691,026
		Filing Date	October 21, 2003
		First Named Inventor	Jonathan J. Wierer Jr.
		Art Unit	2811
		Examiner Name	Sara W. Crane
Sheet 5 of 7	Attorney Docket Number	LUM-03-03-02	

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SC		J. RISTIC et al., "Characterization of GaN quantum discs embedded in AlxGa1-xN nanocolumns grown by molecular beam epitaxy," Physical Review B68, (2003), The American Physical Society, pp. 125305-1 to 125305-5.	
		J.NOBORISAKA et al., "Catalyst-free growth of GaAs nanowires by selective-area metalorganic vapor-phase epitaxy," Applied Physics Letters 86, (2005), American Institute of Physics, pp. 213102-1 to 213103-3.	
		T. HAMANO et al. "New Technique for Fabrication of Two-Dimensional Photonic Bandgap Crystals by Selective Epitaxy," Jpn. J. Appl. Phys. Vol. 36 (1997), pp. L286 to L288.	
		S. HAFFOUZ et al., "Effect of Magnesium and Silicon on the lateral overgrowth of GaN patterned substrates by Metal Organic Vapor Phase Epitaxy," MRS Internet J. Nitride Semicond. Res. 3, 8 (1998), 1998-1999 The Materials Research Society, pp. 1 to 6.	
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		KWA-MOK KIM et al., "Growth and characterization of single-crystal GaN nanorods by hydride vapor phase epitaxy," Applied Physics Letters, Vol. 81, No. 12, 16 September 2002, pp. 2193 to 2195.	
		S. HAN et al. "Controlled growth of gallium nitride single-crystal nanowires using a chemical vapor deposition method," J. Mater. Res., Vol. 18, No. 2, Feb. 2003, Materials Research Society, pp. 245 to 249.	
		HWA-MOK KIM, et al., "Nanoscale Ultraviolet-Light-Emitting Diodes Using Wide-Bandgap Gallium Nitride Nanorods," Adv. Mater.2003, 15, No. 7-8, April 17, WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim, pp. 567 to 569.	
		T. KUYKENDALL ET AL., "Metalorganic Chemical Vapor Deposition Route to GaN Nanowires with Triangular Cross Sections," Nano Letters, 2003, Vol. 3, No. 8, American Chemical Society, pp. 1063 to 1066.	
SC		HWA-MOK KIM, et al., "High-Brightness Light Emitting Diodes Using Dislocation-Free Indium Gallium Nitride/Gallium Nitride Multiquantum-Well Nanorod Arrays, Nano Letters 2004, Vol. 4, No. 6, American Chemical Society, pp. 1059 to 1062.	

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SC		V.V. MAMUTIN, et al., "Growth of Self-Organized GaN Nanostructures on Al <sub>2</sub> O <sub>3</sub> (0001) by RF MBE," <u>Proc. Int. Workshop on Nitride Semiconductors, IPAP Conf. Series 1</u> , pp. 413 to 416.	
		J. SU et al., "Catalytic growth of group III-nitride nanowires and nanostructures by metalorganic chemical vapor deposition," <u>Applied Physics Letters</u> 86, (2005), American Institute of Physics, pp. 013105-1 to 013105-3.	
		W. D. ZHOU et al., "Electrically injected single-defect photonic bandgap surface-emitting laser at room temperature," <u>Electronic Letters</u> , 31st August 2000, Vol. 36, No. 18, pp. 1541 to 1542.	
		P. BHATTACHARYA et al., "Electrically Injected Photonic Bandgap Microcavity Light Sources," <u>LEOS 2001 14th. Annual Meeting of the IEEE Lasers &amp; Electro-Optics Society</u> , San Diego, Ca, Nov. 11-15, Vol 1 of 2, pp. 76 to 77.	
		S. KITAMURA et al., "Fabrication of GaN Hexagonal Pyramids on Dot-Patterned GaN/Sapphire Substrates via Selective Metalorganic Vapor Phase Epitaxy," <u>Jpn. J. Appl. Phys.</u> , Vol. 34 (1995), Part 2, No. 9B, 15 September 1995, pp. L1184 to L1186.	
		M. NAGAHARA et al., "Selective Growth of Cubic GaN in Small Areas on Patterned GaAs (100) Substrates by Metalorganic Vapor Phase Epitaxy," <u>Jpn. J. Appl. Phys.</u> , Vol. 33 (1994), Part 1, No. 1B, January 1994, pp. 694 to 697.	
		A. KIKUCHI et al., "Self-Organized InGaN/GaN Multiple Quantum Well Nanocolumn Light Emitting Diodes Grown on (111) Si Substrate," <u>Department of Electrical and Electronics Engineering, Sophia University</u> , 1 page.	
		M. FUJITA et al., "Organic light-emitting diode with ITO/organic photonic crystal," <u>Electronics Letters</u> , 27th November 2003, Vol. 39, No. 24, 2 pages.	
↓		D. PISIGNANO et al., "Planar organic photonic crystals fabricated by soft lithography," <u>Institute of Physics Publishing, Nanotechnology</u> 15 (2004), pp. 766-770.	
SC		T.N. ODER et al., "III-nitride blue and ultraviolet photonic crystal light emitting diodes," <u>Applied Physics Letter</u> , Vol. 84, No. 4, 26 January 2004, pp. 466-468.	

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